INITIAL STATEMENT OF REASONS

TITLE 2. ADMINISTRATION
DIVISION 3. STATE PROPERTY OPERATIONS
CHAPTER 1. STATE LANDS COMMISSION
ARTICLE 4.8 BIOFOULING MANAGEMENT TO MINIMIZE THE TRANSFER OF NONINDIGENOUS SPECIES FROM VESSELS ARRIVING AT CALIFORNIA PORTS

PROBLEM STATEMENT

Biofouling Management

Public Resources Code section 71201(d) declares that the purpose of the Marine Invasive Species Act (the Act; Public Resources Code section 71200 *et seq*.) is to move the State expeditiously toward elimination of the discharge of nonindigenous species into the waters of the State or into waters that may impact the waters of the State. Nonindigenous species (NIS) are organisms that have been transported by humans to locations where they do not naturally or historically occur. Once established, NIS can have adverse economic, ecological, and public health consequences. The Act reduces the risk of NIS introduction by regulating operational and reporting requirements for oceangoing vessels that arrive at the State's ports.

Vessel biofouling (i.e. the attachment or association of organisms to the wetted surfaces of a vessel) is recognized as a major mechanism for the spread of aquatic NIS and is believed to be responsible for up to 60 percent of the established aquatic NIS along the California coast, including bays, harbors, and estuaries (Ruiz et al. 2011).

California's Marine Invasive Species Act requires the removal of biofouling from vessels on a regular basis (Public Resources Code section 71204(f)). Under the Act, a "regular basis" is:

- No longer than by the date of expiration on the vessel's full-term Safety Construction Certificate or an extension of that expiration date
- No longer than by the date of expiration on the vessel's full-term United States Coast Guard Certificate of Inspection or an extension of that expiration date by the United States Coast Guard
- No longer than 60 months since the time of the vessel's last out-of-water drydocking

The definition of “regular basis” is set to expire upon the adoption of the proposed regulations. Thus, the Legislature intended for this provision to be an interim measure until the California State Lands Commission (Commission) could identify and adopt management requirements to satisfy the purpose of the Act.

The current interim requirement to manage biofouling once every five years is not sufficient to satisfy the purpose of the Act because it does not address several high-risk vessel activities that are known to increase biofouling accumulation and present an unacceptably high risk of NIS introductions, including:

- Not using anti-fouling or foul-release coatings to prevent biofouling accumulation
- Using anti-fouling or foul-release coatings aged beyond the effective lifespan for which they were designed
- Remaining in one geographic location for extended periods

The current requirement also does not address the management of several vessel structures that the scientific literature has identified as presenting an unacceptably high risk of NIS accumulation and release, including sea chests, rudders, thrusters, and other recesses or appendages that act as biofouling hotspots and are collectively referred to as “niche areas.” This rulemaking would require vessel owners and operators to manage biofouling on these niche areas in a manner that the owner or operator determines is appropriate for their vessel.

Reporting Forms

The Commission currently requires submission of four reporting forms:

- Forms to be submitted per arrival:
    - Ballast Water Management Report (OMB number 1625-0069). This is a United States Coast Guard (USCG) form that the Commission is required by statute to use.
    - Ballast Water Treatment Supplemental Reporting Form (Revised July 1, 2010) – submission required only for arrivals discharging treated ballast water
- Forms to be submitted once per calendar year:
    - Hull Husbandry Reporting Form (Revised June 6, 2008)
    - Ballast Water Treatment Technology Annual Reporting Form (Revised July 1, 2010)

The recently adopted USCG Ballast Water Management Report (OMB number 1625-0069) contains questions about a vessel’s ballast water treatment system (if installed

onboard) that are similar to questions contained in California's Ballast Water Treatment Supplemental Reporting Form (Revised July 1, 2010), making the Ballast Water Treatment Supplemental Reporting Form redundant and unnecessary.

The two existing annual forms request different types of information, each focusing on either ballast water treatment or biofouling and hull husbandry. The existing requirement to submit and process two separate annual reporting forms places an administrative burden on the regulated industry and Commission staff.

BENEFITS

Biofouling Management

The proposed regulations would serve the following functions:

- Require recordkeeping and reporting of biofouling management strategies and activities that are aligned with the International Maritime Organization's *Guidelines for the Control and Management of Ships' Biofouling to Minimize the Transfer of Invasive Aquatic Species* (hereafter referred to as the "IMO Biofouling Guidelines")
- Encourage the use of best management practices (i.e. appropriate use of anti-fouling or foul-release coatings) for most vessel surfaces
- Require management of typically under-protected niche areas in a manner that a vessel master, owner, operator, or person in charge determines is appropriate
- Require a small minority of vessels from the following three high NIS introduction risk categories to document how biofouling on the vessel's wetted surfaces would be managed:
    - Vessels with anti-fouling or foul-release coatings that are aged beyond their effective coating lifespan
    - Vessels without anti-fouling or foul-release coatings
    - Vessels remaining in one geographic location for 45 days or more
- Provide clarification that the Commission would not prohibit propeller polishing in California waters
- Provide a process for a master, owner, operator, or person in charge of a vessel to petition for an alternative form of management that would satisfy the intent and purpose of the proposed regulations
- Provide a process for a master, owner, operator, or person in charge of a vessel to claim an emergency exemption if necessary

The biofouling management practices, recordkeeping, and reporting requirements prescribed by the proposed regulations are necessary to fulfill the purpose of the Act. The proposed regulations would minimize the introduction of aquatic NIS into the waters of the State of California.

The proposed regulations would also result in an unintended benefit of decreased ship-borne greenhouse gas emissions within State waters. Biofouling on the hull of a vessel increases the surface roughness, leading to increased hydrodynamic drag as the vessel moves through the water. Increased drag requires the vessel to use more power and fuel to move through the water without losing speed. Therefore, the greater the amount of biofouling on a vessel's hull, the more fuel it needs to use to maintain a constant speed; fuel efficiency suffers as a result. Improved biofouling management is therefore expected to reduce biofouling extent and increase fuel efficiency overall. Improved fuel efficiency would result in reduced greenhouse gas emissions (IMO 2014) while in State waters. These results would be aligned with the Commission's Strategic Plan Strategy 1.4: "Incorporate strategies to address climate change, sea-level rise, water conservation, greenhouse gas emissions, and generation of litter and marine debris."

Reporting Forms

The proposed regulations would repeal the requirement to submit two existing annual reporting forms and would combine their contents into one new annual reporting form.

Existing annual reporting forms:

- Hull Husbandry Reporting Form (Revised June 6, 2008)
- Ballast Water Treatment Technology Annual Reporting Form (Revised July 1, 2010)

Proposed combined annual reporting form:

- Marine Invasive Species Program Annual Vessel Reporting Form (SLC 600.12, Revised 08/16)

The proposed regulations would also repeal the requirement to submit an existing reporting form upon every arrival where a vessel discharges treated ballast water. This reporting requirement has become redundant with the new USCG Ballast Water Management Report (OMB number 1625-0069). The existing reporting form is:

- Ballast Water Treatment Supplemental Reporting Form (Revised July 1, 2010)

The proposed regulations would reduce the administrative burden placed on the regulated industry and Commission staff. Industry would be required to complete and submit fewer reporting forms, and Commission staff would receive and process fewer reporting forms.

ECONOMIC IMPACT ASSESSMENT

The proposed regulations may impose an adverse economic impact directly affecting business, including the ability of California businesses to compete with businesses in other states. However, Commission staff has determined that the impacts would likely not be significant, and in many cases may result in an expansion of California businesses.

Commission staff has conducted an Economic Impact Assessment, a report relied upon for this rulemaking action, that analyzes whether and to what extent the adoption of the proposed regulations would affect the:

- Creation or elimination of jobs within the State of California
- Creation of new businesses or the elimination of existing businesses within the State of California
- Expansion of businesses currently doing business within the State of California

The analysis of the potential impacts of the proposed regulations on California jobs and businesses is presented below.

(A) The creation or elimination of jobs within the State of California

Analysis: The proposed regulations would impose recordkeeping, reporting, and biofouling management requirements for vessels operating in California. The proposed regulations place responsibilities on or may impact businesses in the following categories:

- Vessel owners and operators
- Local shipping agents
- Dry docks
- Anti-fouling coating manufacturers
- In-water cleaning and treatment service providers

The proposed regulations are not expected to significantly impact the creation or elimination of jobs associated with ship owners, operators, and vessel crews within the State of California. Most of the potentially affected businesses are based outside of California. Furthermore, many of the biofouling management actions required by the regulations are based on best management practices (e.g. using anti-fouling or foul-release coatings to prevent biofouling accumulation) and are already being implemented by most vessels. The majority of these biofouling management actions are implemented when the vessel is in dry dock (approximately every five years). Therefore, ongoing management actions (e.g. regular in-water cleaning) are expected to be minimal and consist mainly of recordkeeping, reporting, and general maintenance. The ongoing management actions associated with the proposed regulations are not expected to require additional vessel personnel to implement.

The proposed regulations are not expected to significantly impact the creation or elimination of jobs associated with local shipping agent businesses. Local shipping agents serve as a local contact for international vessels, informing them of port and state-specific requirements, collecting fees, and submitting reporting forms to the appropriate authorities. Changes in vessel traffic are likely to influence the number of shipping agent jobs in a specific port or state. However, vessel traffic and reporting are not expected to change because of the proposed regulations; therefore, any impacts on shipping agents would likely be insignificant.

The proposed regulations may lead to the creation of a small number of jobs in the dry docking industry within the State of California, but the actual number would be dependent on future demand and is therefore impossible to predict. There are at least five commercial vessel ship repair (i.e. dry dock) facilities currently operating in California. These five shipyards provide services for vessels ranging in size from small barges to large post-Panamax cruise vessels (larger than 965 feet in length). The proposed regulations are not expected to increase the frequency of vessels undergoing maintenance in dry docks. However, a vessel owner or operator may choose to conduct an unscheduled dry docking to remove biofouling or apply a new anti-fouling or foul-release coating, or to conduct a more thorough maintenance during a scheduled dry docking. These actions may result in increased demand for dry docking personnel, resulting in an increase of an unknown number of jobs.

The proposed regulations may result in the creation of a small number of jobs in the anti-fouling coating industry, but the actual number would be dependent on future demand and is therefore impossible to predict. The proposed regulations encourage the use of best management practices, including the appropriate use of anti-fouling or foul-release coatings (i.e. using coatings aged within their effective coating lifespan). There

may be added demand for high quality, long-lasting coatings and other effective anti-fouling systems because of the proposed regulations, creating job opportunities in the anti-fouling coating industry.

The proposed regulations may lead to the creation of a small number of in-water cleaning jobs within the State of California, but the actual number would be dependent on future demand and is therefore impossible to predict. Biofouling management activities may include in-water cleaning or in-water treatment to reduce biofouling extent. Several in-water cleaning service providers already operate in California and may be available to manage biofouling when vessels are in California waters. Additional local in-water cleaning capacity may be necessary if there is additional demand for cleaning services as a component of a vessel's comprehensive biofouling management strategy.

Conclusion:

1. The proposed regulations would have no impact on the elimination of jobs within the State of California
2. The proposed regulations may lead to the creation of a small, but difficult to predict, number of jobs within the State of California, associated with the:
    a. Dry docking industry
    b. Anti-fouling coating industry
    c. In-water cleaning industry

(B) The creation of new businesses or the elimination of existing businesses within the State of California

Analysis: The proposed regulations would impose recordkeeping, reporting, and biofouling management requirements for vessels operating in California. The proposed regulations place responsibilities on or may impact businesses in the following categories:

- Vessel owners and operators
- Local shipping agents
- Dry docks
- Anti-fouling coating manufacturers
- In-water cleaning and treatment service providers

The proposed regulations are not expected to impact the creation or elimination of businesses associated with ship owners and operators within the State of California. Most of the potentially affected businesses are based outside of California. The proposed regulations would impose recordkeeping, reporting, and biofouling

management requirements for vessels operating in California. Because of the limited scope of the regulations, they are not expected to increase or decrease the number of ship owner or operator businesses.

The proposed regulations are not expected to impact the creation or elimination of local shipping agent businesses. Vessel traffic and reporting are not expected to increase or decrease because of the proposed regulations; therefore, there should be no significant impact on shipping agents.

The proposed regulations are not expected to impact the creation or elimination of dry docking businesses within the State of California. Added demand for dry docking services may impact the number of jobs associated with the dry docking industry, but the demand is not expected to be great enough to create additional dry docking businesses.

The proposed regulations may result in the creation of a small number of businesses in the anti-fouling coating industry, but the actual number would be dependent on future demand and is therefore impossible to predict. The proposed regulations encourage the use of best management practices, including the appropriate use of anti-fouling or foul-release coatings (i.e. using coatings aged within their effective coating lifespan). There may be added demand for high quality, long-lasting coatings and other effective anti-fouling systems because of the proposed regulations. However, vessels would not be required to acquire anti-fouling coating in the State of California. Accordingly, vessels that acquire anti-fouling coating may do so outside the State of California, without having an impact on the creation of small businesses within the State.

The proposed regulations may lead to the creation of a small number of in-water cleaning businesses within the State of California, but the actual number would be dependent on future demand and is therefore impossible to predict. Ongoing biofouling management actions may include in-water cleaning or treatment of wetted vessel surfaces. Although several in-water cleaning service providers already operate within California, additional demand may lead to the creation of new in-water cleaning businesses in California. Several businesses currently operating outside of California have expressed interest in setting up satellite businesses within California ports. The proposed regulations may therefore lead to the creation of a small number of in-water cleaning businesses, most likely small businesses as defined by Government Code section 11342.610. However, the creation of new in-water cleaning companies may be limited by current State Water Resources Control Board (Water Board) or Regional Water Quality Control Board restrictions on in-water cleaning of vessels with copper-containing coatings (under the authority of the National Pollutant Discharge Elimination

System created through the federal Clean Water Act) while within water bodies that are categorized as impaired for copper (under the authority of Clean Water Act section 303(d)). Further, vessel owners or operators may acquire hull cleaning services outside of California, without having an impact on in-water cleaning businesses within the State.

Conclusion:

1. The proposed regulations would have no impact on the elimination of existing businesses within the State of California
2. The proposed regulations may lead to a small, but difficult to predict, number of new businesses within the State of California, associated with the:
    a. Anti-fouling coating industry
    b. In-water cleaning industry

(C) The expansion of businesses currently doing business within the State of California

Analysis: The proposed regulations would impose recordkeeping, reporting, and biofouling management requirements for vessels operating in California. The proposed regulations place responsibilities on or may impact businesses in the following categories:

- Vessel owners and operators
- Local shipping agents
- Dry docks
- Anti-fouling coating manufacturers
- In-water cleaning and treatment service providers

The proposed regulations are not expected to expand businesses in the ship owners and operators categories because the proposed regulations would not increase the number of vessels or shipping companies operating in California. Local shipping agent businesses are also not expected to expand as a result of the proposed regulations because vessel traffic and reporting are not expected to increase.

The proposed regulations may lead to a small expansion of dry docking businesses within the State of California. The proposed regulations are not expected to increase the frequency of vessels undergoing maintenance in dry docks overall. However, a vessel owner or operator may choose to conduct an unscheduled dry docking to remove biofouling or apply a new anti-fouling or foul-release coating, or to conduct more thorough maintenance during a scheduled dry docking. Therefore, there is a small likelihood that dry docks doing business within California may expand their businesses

because of the proposed regulations. It is also possible that vessel owners or operators would opt for dry docking outside California.

The proposed regulations may lead to the expansion of anti-fouling coating businesses that do business within the State of California. The proposed regulations encourage the use of best management practices, including the appropriate use of anti-fouling or foul-release coatings (i.e. using coatings aged within their effective coating lifespan). There may be added demand for high quality, long-lasting coatings, and other effective anti-fouling systems because of the proposed regulations. The magnitude of the potential expansion is unknown, and vessel owners and operators may seek anti-fouling coating from outside California.

The proposed regulations may lead to the expansion of in-water cleaning businesses, specifically local providers doing business in the State. Additional demand for in-water cleaning or treatment services may lead to an expansion of one or more of the in-water cleaning service providers already doing business in the State. Several current service providers have already expressed interest in expanding their services in California waters. However, this potential expansion may be limited by current State Water Resources Control Board or Regional Water Quality Control Board restrictions on in-water cleaning of vessels with copper-containing coatings (under the authority of the National Pollutant Discharge Elimination System created through the federal Clean Water Act) while within water bodies that are categorized as impaired for copper (under the authority of Clean Water Act section 303(d)).

Conclusion:

1. The proposed regulations are not expected to expand businesses in the ship owners and operators and local shipping agents categories
2. The proposed regulations may expand several categories of businesses currently doing business within the State of California, specifically businesses specializing in:
    a. Dry docking maintenance services
    b. The development and manufacturing of anti-fouling coatings
    c. In-water cleaning and treatment services

(D) Benefits of the regulations to the health and welfare of California residents, worker safety, and the State's environment

Analysis: The proposed regulations would impose recordkeeping, reporting, and biofouling management requirements for vessels operating in California. The proposed

regulations do not make changes to existing worker safety requirements, and, therefore, would not have an impact on worker safety within the State of California.

The proposed regulations are expected to benefit both the State's environment and the health and welfare of California residents. Commercial shipping is the primary pathway for the introduction of NIS into California's coastal and estuarine waters (Ruiz et al. 2011).

NIS may cause significant impacts to California's economy, human health, and environment. In the United States, invasive species are believed to be responsible for approximately $120 billion in losses and damages each year (Pimentel et al. 2005). In California, NIS and invasive species may threaten the coastal tourism and recreation industries. These industries represent a large component of California's Gross State Product, more than $18.4 billion in 2013 (NOEP 2016).

Vessel biofouling may contribute to the introduction of problematic and harmful algal bloom diatom (single-celled algae) species. Harmful diatoms include species of the genus *Pseudo-nitzschia*, which produces the toxin domoic acid that can result in gastrointestinal distress, memory loss, coma, and even death in humans (Lefebvre and Robertson 2010). Domoic acid from *Pseudo-nitzschia* blooms have also been linked to large-scale mortality in sea lions along the central California coast (Scholin et al. 2000). Diatoms are typical components of early-stage biofouling communities and can contribute many different species to a ships biofilm (also referred to as slime layer or microfouling).

Several parasites of mussels and barnacles have been detected from biofouling communities on vessels operating within California (Davidson et al. 2013). The presence of parasites within vessel biofouling communities is alarming, because it hints at the potential for biofouling-mediated spread of human pathogens and parasites into and throughout California.

The nonindigenous overbite clam (*Corbula amurensis*) has been associated with biofouling on vessels within the San Francisco Bay region (Davidson et al. 2008a) and has had significant impacts to California's environment and native fish species. The clam was first detected in the San Francisco Bay in 1986 and spread throughout the region's waterways within two years. The clam accounts for up to 95% of the living biomass in some shallow portions of the bay floor (Nichols et al. 1990). It is believed to be a major contributor to the decline of several pelagic fish species in the Sacramento-San Joaquin River Delta, including the threatened native delta smelt, by reducing the plankton food base of the ecosystem (Feyrer et al. 2003, Sommer et al. 2007).

The proposed regulations would satisfy the purpose of the Marine Invasive Species Act, as specified in Public Resources Code section 71201(d): “to move the State expeditiously toward elimination of the discharge of nonindigenous species into the waters of the State.” Vessels complying with the proposed regulations would reduce their likelihood of introducing NIS into California waters. As a result, human health and welfare, as well as the environment, would benefit significantly upon vessel compliance with these regulations.

Conclusions:

1. The proposed regulations would have no impact on worker safety within the State of California
2. Commission staff has determined that the proposed regulations would significantly benefit:
    a. The health and welfare of California residents
    b. The State’s environment

EVIDENCE SUPPORTING FINDING OF NO SIGNIFICANT ADVERSE ECONOMIC IMPACT ON BUSINESS

The proposed regulations require masters, owners, operators, or persons in charge of a vessel to manage biofouling on a vessel’s wetted surfaces. Most vessels are already managing biofouling due to impacts on fuel consumption and efficiency (Finnie and Williams 2010).

The proposed regulations are designed to codify best biofouling management practices. The majority of vessels that are already implementing best practices should not incur significant additional costs to comply with the proposed regulations. A small minority of vessels operating in California may have to improve their current biofouling management practices (e.g. incurring additional costs to upgrade to protective coatings that are more appropriate for the vessel’s operational practices) or may have to implement more reactive practices to manage biofouling after it has accumulated on vessel surfaces (e.g. incurring additional costs for in-water cleaning). Prevention of biofouling accumulation is preferred for NIS prevention purposes and is generally more cost-effective than frequent biofouling removal.

Potential cost impacts on representative persons or businesses are summarized below, categorized by the major provisions of the proposed regulations.

- Biofouling Management Plan and Biofouling Record Book (2 CCR § 2298.3 and 2 CCR § 2298.4): Development costs range from no additional costs (for vessels implementing the IMO Biofouling Guidelines) to $4,000 per vessel. Owners with multiple vessels may be able to spread the costs across their fleet.
- Marine Invasive Species Program Annual Vessel Reporting Form (2 CCR § 2298.5):
    - No additional costs are expected
    - Minimal cost savings are expected, resulting from the elimination of three mandatory reporting forms and replacing them with one form
- Biofouling management of hulls and other wetted surfaces (2 CCR § 2298.6(a)):
    - The majority of vessels already implementing best management practices are expected to incur no additional costs.
    - The minority of vessels not implementing best management practices may incur costs to manage biofouling on their wetted surfaces. These costs may include:
        - In-water cleaning at $10,000 - $42,000 per cleaning event
- Biofouling management for niche areas (2 CCR § 2298.6(b)):
    - Management actions are to be determined by the vessel owner, master, operator, or person in charge, therefore costs are variable and difficult to predict. Potential examples include:
        - Anti-fouling or foul-release coatings targeted for niche areas at unknown, but incremental costs above typical coating expenditures
        - Targeted in-water cleaning. For example, propeller polishing at $2,000 to $5,000 per cleaning event.
        - Marine growth prevention systems at $100,000 to $1,000,000 per vessel. At least half of the vessels operating in California already have these systems installed.
- Extended residency periods (2 CCR § 2298.7):
    - Likely to be applicable to a small portion (less than five percent) of vessels arriving at California ports
    - Potential costs range from:
        - In-water inspection at $2,500 to $6,500 per inspection
        - In-water cleaning at $10,000 - $42,000 per cleaning event
- Propeller cleaning (2 CCR § 2298.8): This is merely a clarifying provision. There are no requirements associated with it, therefore no expected costs.

TECHNICAL, THEORETICAL, AND/OR EMPIRICAL STUDY, REPORTS, OR DOCUMENTS RELIED UPON

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Technical Advisory Group (TAG) meeting notes

TAG meeting notes – August 18, 2010

TAG meeting notes – October 21, 2010

TAG meeting notes – February 14, 2011

TAG meeting notes – April 28, 2011

TAG meeting notes – April 4, 2013

PRE-RULEMAKING CONSULTATION

In the preparation of these proposed regulations, the Marine Environmental Protection Division of the Commission formed a cross-interest, multi-disciplinary TAG and facilitated discussions over the development of biofouling management strategies. As mandated in Public Resources Code section 71204.6, representatives from the State Water Resources Control Board and the USCG were invited to participate. The State Water Resources Control Board actively participated throughout the process, while the USCG, because of scheduling difficulties, was involved through informal discussions and comments. The USCG was provided with the meeting notes and drafts of the regulatory language that were distributed to the entire TAG. The following groups also participated:

- Shipping industry representatives, including: ship owners, trade associations, dry dock facilities, in-water cleaning companies, and anti-fouling system manufacturers and distributors. Specifically, the Pacific Merchant Shipping Association, World Shipping Council, Matson Navigation, Chevron Shipping, Stephan George Associates, Seaspan Marine Corporation, Muldoon Marine Services, BAE Systems San Francisco Ship Repair, Bay Ship & Yacht, Propulsion Dynamics, Inc., Farwest Corrosion Control Company, American Coatings Association, and International Paints.
- Researchers specializing in biofouling and marine bioinvasions. Specifically, researchers affiliated with: the Smithsonian Environmental Research Center, Portland State University, Aquatic Bioinvasions Research and Policy Institute, National Institute for Water and Atmospheric Research (New Zealand), Biofouling Solutions (Australia), University of New South Wales (New Zealand), and Limnomar (Germany).
- Non-governmental environmental organizations. Specifically, The Bay Institute and San Francisco Baykeeper.
- Resource-related state, federal, and international government agencies. Specifically, the California Department of Fish and Wildlife, California State Water Resources Control Board, San Francisco Estuary Partnership (partnership of agencies, non-profits, citizens, and scientists), Washington Department of Fish and Wildlife, Oregon Department of Environmental Quality, Hawaii Department of Land and Natural Resources, U.S. Coast Guard, U.S. Navy, Transport Canada,

Fisheries and Oceans Canada, New Zealand Ministry for Primary Industries, Australia Department of Agriculture, and the Ballast Water and Biofouling Working Group within the International Maritime Organization.

Five TAG meetings were held between August 18, 2010, and April 2013. During these meetings, staff facilitated information-sharing, discussion, and deliberation over the risks posed to California waters from vessel biofouling. The TAG considered potential management strategies to mitigate those risks. The group also discussed the contents of the *Guidelines for the Control and Management of Ships' Biofouling to Minimize the Transfer of Invasive Aquatic Species* (IMO 2011) that were being developed at the time by the International Maritime Organization (IMO), as well as the applicability of several of the provisions within the IMO guidelines for inclusion within the California regulations.

This TAG discussed a variety of regulatory alternatives and reviewed three drafts of the proposed regulations between August 2010 and April 2011.

The Commission published the proposed regulations in the Notice Register in September 2011 (California Regulatory Notice Register 2011, No. 37-Z). Commission staff modified the text of the proposed regulations three times throughout the ensuing rulemaking process, and the rulemaking action ended in September 2012 without final adoption.

Commission staff reconvened the TAG in April 2013 to discuss several regulatory alternatives to the previous approach. This group (including the Water Board and USCG) reviewed and discussed three additional drafts of the proposed regulations between April 2013 and July 2014.

Commission staff published a revised draft of the proposed regulations on the Commission’s website on November 17, 2014, to initiate an informal public comment period. The purpose of this informal comment period was to allow members of the public who are not part of the TAG to provide feedback on the draft regulations. Commission staff also convened stakeholder meetings in southern and northern California during November 2014 to provide outreach and inform the public of the informal comment periods for this and other Commission rulemaking actions.

The Commission published a revised set of proposed regulations in the Notice Register in May 2015 (California Regulatory Notice Register 2015, No. No. 18-Z). Commission staff modified the text of the proposed regulations one time during the rulemaking process. The Commission approved the proposed regulations in December 2015, but staff withdrew the rulemaking action in March 2016.

Commission staff revised the proposed regulations, and distributed a draft to the TAG for review and comments in June 2016 to prepare for this rulemaking action.

REASONABLE ALTERNATIVES TO THE REGULATION AND THE AGENCY'S REASONS FOR REJECTING THOSE ALTERNATIVES

Commission staff initially considered a "no project" alternative and determined this approach to be inadequate. The "no project" alternative would have left in place minimal biofouling management requirements established by the Legislature (Public Resources Code section 71204(f)), would leave in place existing redundant and burdensome reporting requirements (2 CCR § 2298, 2297.1), and would not fulfill the purpose of the Act as defined in Public Resources Code section 71201(d).

Commission staff, the TAG (including the Water Board and USCG), and the public have now discussed and reviewed fourteen drafts of the proposed regulations. Many alternative approaches were discussed and analyzed during these review and comment periods. Records of the TAG discussions and the various draft regulatory documents are available for public review as part of this rulemaking. These documents are listed in the Initial Statement of Reasons under "Technical, Theoretical, and/or Empirical Study, Reports, or Documents Relied Upon." Commission staff has determined that the proposed regulations now represent the most effective and least burdensome approach to fulfil the purpose of the Act as defined in Public Resources Code section 71201(d) and align with the intent of Public Resources Code section 71204.6.

Specific alternatives that were discussed and reviewed during this TAG process and the previous rulemaking actions included:

- Making all of the proposed regulatory sections effective on the proposed implementation date rather than after the first regularly scheduled dry dock or delivery after that date.
    - This alternative was rejected because many of the proposed provisions, including sections 2298.3, 2298.4, 2298.6, and 2298.7, would require planning prior to and during a vessel's regularly scheduled dry docking or during the shipbuilding process. Requiring these provisions without allowing for planning and implementation time was determined to be impractical.

- Performance standards for biofouling percentage cover for all vessels, including vessel niche areas (standard proposed as five percent cover) and hulls (standard proposed as one percent cover).
    - These requirements were removed because of the associated potential need to increase in-water cleaning frequency and the related impacts to the integrity of anti-fouling or foul-release coatings.
    - These standards were replaced by provisions codifying best practices (i.e. using anti-fouling or foul-release coatings within their effective coating lifespans) and allowing vessel owners/operators to identify and implement niche area management practices that they determine to be appropriate for their ships.

- Performance standards for biofouling percentage cover for vessels not using best preventive practices. This approach would have codified best preventive practices and would include performance standards only for those vessels not employing best preventive practices.
    - This alternative was rejected because staff had not proposed or adopted protocols for assessing compliance with the performance standards that were considered. This approach did not present a vessel owner or operator with an understanding of how compliance could be achieved.

- Presumed compliance provisions for select maintenance practices in lieu of performance standards.
    - These provisions were removed because many of the suggested options have not been demonstrated to be effective to an acceptable level.
    - These sections were replaced by provisions codifying best practices (i.e. using anti-fouling or foul-release coatings within their effective coating lifespans) and allowing vessel owners or operators to identify and implement niche area management practices that they determine to be appropriate for their ships.

- Continuing to require submission of two existing annual reporting forms.
    - This alternative was rejected because it would continue to place unnecessary administrative burdens on Commission staff and the regulated industry.

- Requiring submission of the Marine Invasive Species Program Annual Vessel Reporting Form after arrival or after a request by the Commission.
    - These alternatives were rejected because the information provided on the reporting form would be used to prioritize inspections and boarding based

on perceived risk of NIS introduction. Submission prior to arrival is necessary for these pre-arrival risk assessments.

- Extended residency period provisions for vessels remaining in one location for 90, 60, 45, or 30 days.
    - The 90 and 60-day thresholds were rejected because they would have been ineffective at capturing and requiring biofouling management for a large enough portion of vessels that undergo long residency periods, a practice associated with a high likelihood of biofouling accumulation.
    - The 30-day threshold was rejected because it was believed to place an excessive management burden on too many vessels.
    - The proposed 45-day threshold was selected because it represented most occurrences outside of normal vessel operations, and therefore would restrict the requirements to vessels that exhibit unusual operations (e.g. long-term layup).

- Biofouling Management Plans and Biofouling Record Books that were prescriptive in describing required components.
    - These requirements were rejected because they were too prescriptive.
    - These requirements were revised to require alignment with the IMO Biofouling Guidelines.

- Mandatory recording within the Biofouling Record Book of all port residency periods of ten or more days.
    - This requirement was rejected because the record-keeping requirement would be too onerous, and wouldn't provide a substantial benefit to the State. The information is currently provided on the annual Hull Husbandry Reporting Form and would continue to be collected through the Marine Invasive Species Program Annual Vessel Reporting Form.

- Obviously excessive biofouling provision to require biofouling management if a vessel is found to have biofouling in excess of fifteen percent cover of the surface area under investigation.
    - This provision was rejected for clarity purposes because it relied upon a set of compliance assessment protocols that have not yet been developed and adopted.

RATIONALE FOR POLICY CHOICE

Based on discussions with the TAG (including the Water Board and USCG) and review of all comments received during the TAG process and the previous rulemaking actions, Commission staff has determined that there are no alternatives that would be:

- More effective in carrying out the purpose of the proposed regulations
- As effective and less burdensome to affected private persons or businesses
- More cost-effective to affected private persons and equally effective in implementing the statutory policy or other provision of the law

EFFORTS TO AVOID UNNECESSARY DUPLICATION OR CONFLICTS WITH FEDERAL REGULATIONS

The U.S. federal government has not yet adopted comprehensive biofouling management regulations. Although the federal government has jurisdiction over vessel design and structure, the Commission's proposed regulations are developed to protect California's coastal environment by regulating industry practices through the use of best management practices.

United States federal requirements for biofouling management to prevent the introduction of NIS are located within the Code of Federal Regulations (CFR) adopted and implemented by the USCG and the Vessel General Permit for Discharges Incidental to the Normal Operation of Vessels (hereafter referred to as the Vessel General Permit) issued and implemented by the U.S. Environmental Protection Agency (EPA).

The USCG requirements are found specifically within 33 CFR 151.2050(e), 33 CFR 151.2050(f), and 33 CFR 151.2050(g)(3). These regulations require the following management activities:

- Rinsing of vessel anchors and anchor chains to remove organisms at their place of origin
- Removing biofouling from the hull, piping, and tanks on a regular basis
- Disposing of any removed substances in accordance with local, state, and federal regulations
- Detailing biofouling maintenance and sediment removal procedures within a ballast water management plan

The USCG requirements do not provide guidance for biofouling removal frequency, other than the undefined phrase "regular basis." Therefore, there is no specific

requirement to manage biofouling in a comprehensive manner. There is a requirement to keep biofouling management records onboard, within a vessel's ballast water management plan. Unlike the proposed regulations for vessels arriving at California ports, there is no USCG requirement to submit reporting forms detailing biofouling management activities. There also are no requirements for high-risk vessels that remain in one location for extended periods to manage biofouling prior to entering a United States port.

The USCG requires submission of a Ballast Water Management Report (BWMR) from vessels arriving at U.S. ports or places. This BWMR requests information about a vessel's ballast water treatment system (if installed), including information about treated ballast water discharges. The amount of detail about a vessel's ballast water treatment system collected with the BWMR is limited to the name of the system. The BWMR does not request additional information necessary to identify additional risks of introducing NIS, including information about the system's installation date, frequency of use, malfunctions, and biological performance testing. The proposed Marine Invasive Species Program Annual Vessel Reporting Form fills this gap and provides Commission staff with information necessary to carry out the purpose of the Marine Invasive Species Act.

The Commission proposes to repeal the requirement to submit the Ballast Water Treatment Supplemental Reporting Form, currently located in 2 CCR § 2297.1, to avoid duplication with the BWMR that was recently released by the USCG and required since May 1, 2016.

The EPA requirements are located within the 2013 Vessel General Permit (https://www.epa.gov/npdes/vessels-vgp) sections 2.2.20 and 2.2.23. These provisions require the following biofouling management activities:

- Removal of fouling organisms from seawater piping on a regular basis and disposal of removed substances in accordance with local, state, and federal regulations
- Minimize the transport of attached living organisms when traveling into U.S. waters from outside the U.S. economic zone or between Captain of the Port zones

The EPA requirements offer limited guidance on management measures to minimize the transport of attached living organisms. These management measures may include the use of appropriate anti-fouling management systems, in-water inspection and cleaning, and thorough cleaning of hulls and niche areas while in dry dock. The EPA

Vessel General Permit requirements are vague (e.g. “minimize” and “regular basis”) and function more like guidance rather than enforceable requirements.

Unlike the proposed regulations for vessels at California ports, there is no EPA Vessel General Permit requirement to submit annual reporting forms outlining vessel-specific maintenance and operational practices that influence biofouling accumulation and viability. The EPA requires vessels to submit limited maintenance information in a Notice of Intent at the initiation of each five-year Vessel General Permit cycle. Vessel operational and maintenance practices that are known risk factors for biofouling accumulation often occur more frequently than this fixed five-year cycle. Therefore, reliance on these data alone would not fulfill the purpose of the Act.
There is no mechanism in the Vessel General Permit for assessing NIS introduction risk on a per-arrival basis, a practice that is critical to ensuring that high-risk vessels are identified and properly inspected and managed.

Unlike the proposed California regulations, the EPA Vessel General Permit contains no management requirements for vessels that represent high NIS introduction risk, specifically:

- Vessels without anti-fouling or foul-release coatings
- Vessels with anti-fouling or foul-release coatings that are aged beyond their effective coating lifespan
- Vessels remaining in one geographic location for extended residency periods

The planning and implementation of a biofouling management strategy made specific by the proposed regulations is necessary to minimize the transport of nonindigenous species into and throughout the waters of the State of California.

Commission staff believes that the cost of these differing state regulations is justified by the benefit to human health, public safety and welfare, and the environment.

Title 2, Division 3, Chapter 1, Article 4.8
~~The Collection of Information Relating to Hull Husbandry Practices of Vessels for Control of Marine Invasive Species in Waters of California~~ Biofouling Management Regulations for Vessels Arriving at California Ports

The following is the specific purpose and necessity for each of the proposed regulations. Prior to the explanation for each provision, the text of the proposed

regulation is set forth and indented. Proposed additions to the regulation are underlined. Deletions from the existing text are displayed in strikeout (e.g. ~~strikeout~~).

~~Section 2298. Hull Husbandry Reporting Form~~

~~(a) Section 71205(e) of the Public Resources Code requires the master, owner, operator, agent, or person in charge of a vessel carrying, or capable of carrying, ballast water into the coastal waters of the State to file the "Hull Husbandry Reporting Form" developed by the California State Lands Commission providing information regarding the hull husbandry practices relating to the vessel, within 60 days of receiving a written or electronic request from the Commission.~~

~~(b) The "Hull Husbandry Reporting Form" (revised June 6, 2008) is hereby incorporated by reference and shall be used by the master, owner, operator, agent, or person in charge of a vessel carrying, or capable of carrying, ballast water into the coastal waters of the State to comply with the provisions of Section 71205(e) of the Public Resources Code.~~

SPECIFIC PURPOSE OF THE REGULATION

The specific purpose of this action is to eliminate an unnecessarily burdensome reporting requirement.

NECESSITY

This action is necessary to reduce the excessive number of reporting forms that vessels are required to submit and Commission staff must track and process.

Section 2298.1. Purpose, Applicability, and Date of Implementation.

(a) The purpose of the regulations in Title 2, Division 3, Chapter 1, Article 4.8 of the California Code of Regulations is to move the state expeditiously toward elimination of the discharge of nonindigenous species into the waters of the State or into waters that may impact the waters of the State, based on the best available technology economically achievable.

SPECIFIC PURPOSE OF THE REGULATION

The specific purpose of subdivision (a) is to declare the overall intent of the proposed regulations. The intent of this subdivision is to reiterate the purpose of the Marine Invasive Species Act, as specified in Public Resources Code section 71201(d).

NECESSITY

Public Resources Code section 71201.7 authorizes the Commission to adopt regulations to implement the provisions of the Marine Invasive Species Act. The proposed regulation, 2 CCR § 2298.1(a) is necessary to ensure that implementation of the proposed regulations would be guided by the purpose of the Marine Invasive Species Act, as stated in Public Resources Code section 71201(d).

(b) The provisions of Article 4.8 apply to all vessels carrying, or capable of carrying, ballast water, that arrive at a California port, except those vessels that are exempt under Section 71202 of the Public Resources Code or those vessels that satisfy the requirements of the emergency exemption clause in 2 CCR § 2298.9.1.

SPECIFIC PURPOSE OF THE REGULATION

This specific purpose of this provision is to specify the vessels to which these regulations apply.

NECESSITY

This provision is necessary to inform the regulated community of the scope and application of these regulations.

(c) For the purpose of Article 4.8, all ports in the San Francisco Bay area East of the Golden Gate bridge, including the Ports of Stockton and Sacramento, shall be interpreted as the same “California port”; the Ports of Los Angeles, Long Beach, and the El Segundo marine terminal shall be interpreted as the same “California port.”

SPECIFIC PURPOSE OF THE REGULATION

The specific purpose of this provision is to establish the applicability of these regulations to vessels operating in two multi-port regions in California while fulfilling the purpose of the Act.

NECESSITY

The “port” designation applied to the San Francisco Bay area ports and to the Los Angeles/Long Beach/El Segundo port complex is necessary for logistical and economic considerations for vessels operating within the multi-port complexes while remaining protective of California waters.

The designation of these multiple port complexes as single ports for the purpose of Article 4.8 is reasonable given the current knowledge of NIS dispersal within an estuary, and given the logistical realities of vessel voyage patterns. These multi-port complexes are connected geographically, and it is reasonable to assume that NIS may spread naturally within them. These multi-port designations also align with existing regulations in Article 4.6 and will improve consistency and clarity.

(d) The provisions of these regulations shall become effective July 1, 2017.

SPECIFIC PURPOSE OF THE REGULATION

The specific purpose of this provision is to make clear the effective date of the regulations.

NECESSITY

This provision is necessary to establish a clear timeline for compliance and allow the regulated community time to prepare the necessary documentation for compliance.

Section 2298.2. Definitions.

The following definitions shall govern the construction of this Article:

(a) “Anti-fouling coating” means any paint or other coating that prevents or deters the attachment and growth of biofouling organisms on the wetted portions of a vessel. Anti-fouling coatings may include biocidal or non-biocidal anti-fouling coatings.

(b) "Anti-fouling system" means a coating, paint, surface treatment, surface, or device that is used on a vessel to minimize or prevent attachment, growth, or association of biofouling.

(c) "Biocidal anti-fouling coating" means an anti-fouling coating containing one or more chemical substances that are toxic or act as a deterrent to the settlement of living organisms.

(d) "Biofouling," also referred to as hull fouling or marine growth, means the attachment or association of marine organisms to the wetted portions of a vessel or its appurtenances, including but not limited to sea chests, propellers, anchors and associated chains, and other niche areas. Biofouling includes microfouling and macrofouling.

(e) "CCR" means the California Code of Regulations.

(f) "Commission staff" means the staff of the California State Lands Commission.

(g) "Division Chief" means the Chief of the Marine Environmental Protection Division of the California State Lands Commission or any employee of the Marine Environmental Protection Division authorized by the Division Chief to act on her or his behalf.

(h) "Effective coating lifespan" means the expected age of an anti-fouling coating, as determined by the manufacturer and based on the vessel-specific application scheme (e.g. coating thickness) at the time of application, at which the coating is no longer expected to satisfactorily prevent or deter biofouling.

(i) "Extended residency period" means remaining in one port consecutively for forty-five days or longer.

(j) "Foul-release coating" means a non-biocidal anti-fouling coating with surface properties that minimize the adhesion of biofouling organisms, resulting in organism detachment by vessel movement.

(k) "Geographic location" means a port, anchorage, city and country, or latitude and longitude coordinates.

(l) "In-water cleaning" means the physical removal of biofouling from the wetted portions of a vessel while the vessel remains in the water.

(m) "In-water inspection" means underwater survey or inspection by diver(s) or with remotely operated vehicle(s). Inspections of a vessel's hull and other underwater surfaces for purposes other than surveying biofouling may be considered opportunities for evaluating the extent of biofouling.

(n) “In-water treatment” means any method or process meant to kill or inactivate, but not remove, biofouling from the wetted portions of a vessel while the vessel remains in the water.

(o) “Macrofouling” means biofouling of large, distinct multicellular organisms visible to the human eye such as barnacles, tubeworms, or fronds of algae.

(p) “Marine Growth Prevention System” or “MGPS” means an anti-fouling system device used to reduce or prevent biofouling accumulation in internal seawater systems and sea chests. MGPS may include the use of anodes, injection systems, and electrolysis.

(q) “Microfouling” means biofouling of microscopic organisms such as bacteria and single-celled algae and the slimy substances that they produce. Microfouling is commonly referred to as a slime layer or biofilm.

(r) “Niche area” means an area on a vessel susceptible to biofouling due to variable hydrodynamic forces, susceptibility to coating system wear or damage, or inadequate protection by anti-fouling systems. Examples of niche areas include, but are not limited to, sea chests, bow thrusters, propeller shafts, inlet gratings, and out-of-water support strips.

(s) “Non-biocidal anti-fouling coating” means an anti-fouling coating that does not rely on one or more chemical substances intended to be toxic or act as a deterrent to organism settlement in order to achieve its anti-fouling properties. Non-biocidal anti-fouling coatings may include foul-release coatings.

(t) “Out-of-water maintenance” means removal of the vessel from the water and placement into a dry dock or slipway for inspection or maintenance. Out-of-water maintenance is commonly referred to as dry docking.

(u) “Out-of-water support blocks” means support blocks placed underneath the vessel while the vessel is undergoing out-of-water maintenance in a dry dock or slipway.

(v) “Out-of-water support strips” means sections of a vessel’s hull that rest on out-of-water support blocks while the vessel is undergoing out-of-water maintenance in a dry dock or slipway. These areas are typically not cleaned or treated with fresh anti-fouling systems, resulting in reduced anti-fouling protection.

(w) “Port” means any port or place in which a vessel was, is, or will be anchored or moored, or where a vessel will transfer cargo.

(x) “Vessel” means a vessel of 300 gross registered tons (GRT) or more.

(y) “Wetted portion of a vessel” means all parts of a vessel's hull and structures that are either submerged in water when the vessel is loaded to the deepest permissible draft or associated with internal piping structures in contact with water taken onboard.

SPECIFIC PURPOSE OF THE REGULATION

The specific purpose of this section is to define key terms that are used throughout the regulations.

NECESSITY

Without clarification, many of these terms can be subject to differing interpretation. These definitions, therefore, are necessary to ensure that these regulations precisely express the intended meanings of these terms.

The following subdivisions include terms that are either defined directly or slightly modified from the IMO Biofouling Guidelines (IMO 2011). Slight modifications from the definitions in the IMO Biofouling Guidelines were made as necessary to align with existing California statutory or regulatory terms or to improve clarity based on consultation with the TAG. These subdivisions are proposed for adoption to maintain international consistency and to maintain the continuity and clarity of Article 4.8:

- Section 2298.2(b) “Anti-fouling system”
- Section 2298.2(l) “In-water cleaning”
- Section 2298.2(o) “Macrofouling”
- Section 2298.2(p) ”Marine Growth Prevention System” or “MGPS”
- Section 2298.2(q) “Microfouling”
- Section 2298.2(r) “Niche area”

The following subdivisions are either defined directly or slightly modified from Public Resources Code section 71200 to maintain consistency with the Marine Invasive Species Act and to maintain the continuity and clarity of Article 4.8:

- Section 2298.2(d) “Biofouling”
- Section 2298.2(f) “Commission staff”
- Section 2298.2(w) “Port”
- Section 2298.2(x) “Vessel”
- Section 2298.2(y) “Wetted portion of a vessel”

The following subdivisions are common biofouling management terms, and are adopted here to maintain the continuity and clarity of Article 4.8:

- Section 2298.2(a) “Anti-fouling coating”
- Section 2298.2(c) “Biocidal anti-fouling coating”
- Section 2298.2(j) “Foul-release coating”
- Section 2298.2(s) “Non-biocidal anti-fouling coating”
- Section 2298.2(t) “Out-of-water maintenance”
- Section 2298.2(u) “Out-of-water support blocks”

The following subdivisions are terms either used commonly in the scientific literature or discussed during technical advisory group meetings and reviews of draft regulatory text, and are adopted here to maintain the continuity and clarity of Article 4.8:

- Section 2298.2(h) “Effective coating lifespan”
- Section 2298.2(i) “Extended residency period”
- Section 2298.2(m) “In-water inspection”
- Section 2298.2(n) “In-water treatment”
- Section 2298.2(v) “Out-of-water support strips”

The following subdivisions are clarifying definitions and are adopted here to maintain the continuity and clarity of Article 4.8:

- Section 2298.2(e) “CCR”
- Section 2298.2(g) “Division Chief”
- Section 2298.2(k) “Geographic location”

Section 2298.3. Biofouling Management Plan.

(a) The provisions described in this section apply to newly constructed vessels delivered into service on or after January 1, 2018, and to existing vessels beginning with completion of the first regularly scheduled out-of-water maintenance on or after January 1, 2018.

SPECIFIC PURPOSE OF THE REGULATION

The specific purpose of this regulation is to make clear when vessel owners or operators must be in compliance with this section.

NECESSITY

This regulation is necessary to provide a vessel owner or operator with time to develop and implement an effective Biofouling Management Plan and comply with Article 4.8. Preventive biofouling management is an important component of an effective Biofouling Management Plan, which requires time to prepare. This provision would allow vessel owners or operators time to develop a vessel-specific management plan and implement it at an appropriate time (i.e. when the vessel is in dry dock or during shipbuilding).

(b) The master, owner, operator, or person in charge of a vessel carrying, or capable of carrying, ballast water that arrives at a California port shall maintain a Biofouling Management Plan to be retained onboard and prepared specifically for that vessel. Upon request, the plan shall be made available to Commission staff for inspection and review. This plan shall provide a description of the biofouling management strategy for the vessel that is sufficiently detailed to allow a master or other appropriate ship's officer or crew member serving on that vessel to understand and follow the biofouling management strategy. At a minimum, this plan shall:

(1) Be regularly reviewed and revised to be current as of the last day of the most recent out-of-water maintenance or delivery if the vessel has never undergone out-of-water maintenance;

(2) Maintain consistency with the components of the Biofouling Management Plan described in the International Maritime Organization's "Guidelines for the Control and Management of Ships' Biofouling to Minimize the Transfer of Invasive Aquatic Species (adopted on July 15, 2011)," hereby incorporated by reference; and

(3) Describe the biofouling management practices and anti-fouling systems specifically used for the hull and each of the vessel's niche areas listed in 2 CCR § 2298.6(b)(1). For each anti-fouling system listed, include the following:

(A) Manufacturer name, model name, and product number, if applicable;

(B) Date each system was installed or applied;

(C) For anti-fouling coatings:

(1) Include the vessel's final specification document for the anti-fouling coating applied or a separate list

documenting the information required by this subparagraph. The specification document or separate list shall include the parameters of the vessel's operating profile used for the specification of the anti-fouling system, including, at a minimum:

(a) The specified intended out-of-water maintenance or dry-docking interval of the vessel;

(b) The specified range of vessel operating speeds;

(c) The specified vessel activity level (e.g. percentage of time underway at sea compared with percentage of time berthed, anchored, moored, or adrift), if applicable;

(d) The specified vessel operating area or trading routes (e.g. coastal, deep-sea), if applicable.

(2) Specify the applied dry film thickness;

(3) Specify the manufacturer's expected effective coating lifespan (e.g. 60 months) at applied dry film thickness; and

(4) Include a copy of the vessel's International Anti-fouling System Certificate used to comply with the International Maritime Organization's Convention on the Control of Harmful Anti-Fouling Systems on Ships (also known as AFS Convention; entered into force on September 17, 2008), if applicable.

(D) For Marine Growth Prevention Systems (MGPS):

(1) Indicate where anodes or dosing outlets are installed (i.e. sea chest, strainer, or other location within seawater intake system); and

(2) Specify manufacturer's recommended doses and dosage frequency, if applicable.

(c) If a vessel does not have a Biofouling Management Plan consistent with subdivisions (a) and (b) of this section, and is arriving at a California port for the first time since the most recent regularly scheduled out-of-water

maintenance or since delivery as a newly constructed vessel if no out-of-water maintenance has yet occurred, there shall be a 60-day grace period commencing on the date of arrival to enable the development of the required documents.

SPECIFIC PURPOSE OF THE REGULATION

The specific purpose of this regulation is to describe the framework for a vessel-specific biofouling management plan and records that are consistent with the IMO Biofouling Guidelines.

The specific purpose of subdivision (b)(1) is to ensure that the Biofouling Management Plan is current and up-to-date. Most vessels would apply new anti-fouling or foul-release coatings during out-of-water maintenance events. These occurrences are therefore the most appropriate time for reviewing and revising a vessel's Biofouling Management Plan.

The specific purpose of subdivision (b)(2) is to ensure consistency and compatibility with the Biofouling Management Plan detailed in the IMO Biofouling Guidelines. Subdivision (b)(2) is intended specifically to:

- Maintain consistency with voluntary international guidelines
- Avoid overburdening vessel owners or operators with contradictory requirements

The specific purpose of subdivision (b)(3) is to require additional details and information not specifically contained within the IMO Biofouling Guidelines but necessary to demonstrate and maintain compliance with the proposed regulations contained within Article 4.8. This subdivision specifically requires application and operational details about the anti-fouling systems that are used to protect the vessel's wetted surfaces, including biofouling hotspots (i.e. niche areas). Much of this information is typically contained within a final specification document from the manufacturer that outlines the unique specifications of the anti-fouling coating(s) applied to the vessel (e.g. expected coating lifespan, targeted application dry-film thickness, minimum vessel speed for proper functioning). The purpose for this additional information is to allow Commission staff to:

- Assess compliance with proposed section 2298.6
- Prioritize inspections of vessels with high NIS introduction risk, as determined by comparing the anti-fouling coating specifications to the vessel's operational profile (i.e. identifying mismatched coatings).

The specific purpose of subdivision (c) is to allow adequate time for a vessel owner or operator to prepare a Biofouling Management Plan in the event that the vessel did not intend to arrive at a California port but was routed to California without the required documents.

NECESSITY

The Biofouling Management Plan is necessary to list and describe the measures that constitute the vessel-specific biofouling management strategy and is critical for minimizing the transfer of NIS into California. The Biofouling Management Plan is also necessary to serve as a central location to document the vessel's management practices to allow for:

- Easy access by the master and crew
- Easy access for Commission staff to assess compliance with the provisions of Article 4.8

Subdivision (b)(1) is necessary to ensure that a vessel's Biofouling Management Plan has current information to allow the vessel master and crew to implement an effective biofouling management strategy. A Biofouling Management Plan that is not up-to-date indicates a poorly-planned or ineffective strategy.

Subdivision (b)(2) is necessary to ensure that international consistency is maintained. During the technical advisory group meetings held to develop the proposed regulations, staff was encouraged to maintain consistency with the IMO Biofouling Guidelines, including the IMO Biofouling Management Plan.

Biofouling causes increased hydrodynamic drag while a vessel is underway, reducing fuel efficiency and increasing operating costs. Biofouling on the hull is typically managed to reduce drag and operating costs. However, biofouling in certain niche areas (e.g. sea chests, thrusters, rudders) is typically unmanaged or undermanaged because biofouling in these areas does not significantly increase drag. Many of these niche areas are also sheltered from the harsh hydrodynamic environment of the exposed hull, therefore providing a favorable habitat for the accumulation of biofouling organisms. Subdivision (b)(3) is necessary to focus management attention on these highly susceptible niche areas and to identify management practices used on all of a vessel's wetted surfaces.

Subdivision (b)(3)(A) is necessary to identify the preventive maintenance tools and coatings used to manage biofouling on a vessel's wetted surfaces. Maintaining this

information in the Biofouling Management Plan is necessary to allow Commission staff to verify vessel-submitted reporting form data, as described in 2 CCR § 2298.5.

Subdivision (b)(3)(B) is necessary to identify the date that each preventive maintenance tool or coating is installed or applied. An accurate date is necessary to identify the age of the antifouling coating(s) used on a vessel's wetted surfaces and to compare a coating's age with its effective coating lifespan. Ensuring that this information is accurate and available is necessary to allow Commission staff to assess compliance with biofouling management practices described in 2 CCR § 2298.6.

Subdivision (b)(3)(C) is necessary to specify anti-fouling coating information that would demonstrate a vessel's compliance with best management practices described in 2 CCR § 2298.6. The final specification document described in subdivision (b)(3)(C)(1), or similar information in lieu of a final specification document, is necessary to allow a vessel's master and crew to know the operational parameters that the coating was designed and applied for. This information is important so the crew can be aware of instances when the vessel operates outside of those parameters and is more likely to accumulate biofouling. This final specification document is also necessary to enable Commission staff to identify vessels that have coatings that are not matched to the vessel's operational profile and therefore may pose a greater risk of introducing NIS.

Subdivision (b)(3)(D) is necessary to identify the installation location and recommended biocide dosage for marine growth prevention systems. Maintaining this information in the Biofouling Management Plan is necessary to allow Commission staff to verify vessel-submitted reporting form data, as described in 2 CCR § 2298.5, and to guide a vessel-specific risk assessment to determine if further inspection is necessary.

Subdivision (c) is necessary for instances where a vessel is not scheduled to arrive at a California port, and therefore may not have a Biofouling Management Plan, but is rerouted to a California port. This subdivision provides a vessel with a 60-day grace period to prepare the required documents if the vessel will be returning to California. This subdivision is necessary because it allows all vessels, including those that were not scheduled to arrive at a California port, a reasonable opportunity to achieve compliance.

Section 2298.4. Biofouling Record Book.

(a) The provisions described in this section apply to newly constructed vessels delivered into service on or after January 1, 2018, and to existing

vessels beginning with completion of the first regularly scheduled out-of-water maintenance on or after January 1, 2018.

SPECIFIC PURPOSE OF THE REGULATION

The specific purpose of this regulation is to establish and make clear the effective date of this section, based on a vessel's date of delivery or most recent out-of-water maintenance.

NECESSITY

The Biofouling Record Book is intended to document the implementation of a vessel-specific Biofouling Management Plan. This regulation is therefore necessary to align the effective date for the requirement to develop and maintain a Biofouling Record Book with the effective date for the Biofouling Management Plan.

(b) The master, owner, operator, or person in charge of a vessel carrying, or capable of carrying, ballast water that arrives at a California port shall maintain a Biofouling Record Book to be retained onboard the vessel. The Biofouling Record Book must contain details of all inspections and biofouling management measures undertaken on the vessel since the beginning of the most recent scheduled out-of-water maintenance or since delivery into service as a newly constructed vessel if no out-of-water maintenance has yet occurred. At a minimum, this record book shall:

(1) Maintain consistency with the components of the Biofouling Record Book described in the International Maritime Organization's "Guidelines for the Control and Management of Ships' Biofouling to Minimize the Transfer of Invasive Aquatic Species (adopted on July 15, 2011)";

(2) Include a description of all completed niche area management practices, as required in 2 CCR § 2298.6(b)(2).

(c) If a vessel does not have a Biofouling Record Book consistent with the requirements of subdivisions (a) and (b) of this section and is arriving at a California port for the first time since the most recent regularly scheduled out-of-water maintenance or since delivery as a newly constructed vessel if no out-of-water maintenance has yet occurred, there shall be a 60-day grace period commencing on the date of arrival to enable the development of the required documents. During the 60-day grace period, the master, owner, operator, or person in charge of a vessel subject to this subdivision shall:

(1) Maintain records containing details of all inspections and biofouling management measures undertaken on the vessel since the beginning of the most recent regularly scheduled out-of-water maintenance or since delivery into service as a newly constructed vessel if no out-of-water maintenance has yet occurred; and

(2) Make the records described in 2 CCR § 2298.4(c)(1) available to Commission staff upon request.

SPECIFIC PURPOSE OF THE REGULATION

The specific purpose of this regulation is to make specific the framework for a record book to document an individual vessel's biofouling management actions and promote consistency with international standards. The Biofouling Record Book is a major component of the IMO Biofouling Guidelines and is encouraged through the recently adopted New Zealand biofouling management regulations (i.e. Craft Risk Management Standard; see NZ MPI 2014). This regulation is therefore intended to require the development and maintenance of a record book to document the implementation of each vessel's biofouling management plan. This regulation will help achieve the goals of the Act and lead to better compliance for the international regulatory community.

The purpose of subdivision (b)(1) is to ensure consistency and compatibility with the Biofouling Record Book provisions in the IMO Biofouling Guidelines. Although the IMO adopted the Biofouling Guidelines as a voluntary instrument, IMO representatives expect that some vessel owners and operators would implement the guidelines in some fashion, including the development and maintenance of a Biofouling Record Book. Subdivision (b)(1) is intended specifically to:

- Maintain consistency with voluntary international guidelines
- Avoid overburdening vessel owners or operators with contradictory requirements
- Align with IMO guidance on appropriate vessel-specific biofouling management plans, practices, and records.

The purpose of subdivision (b)(2) is to require vessels to document specific information about the maintenance and management of niche areas that provide habitat for biofouling organisms. This subdivision is necessary to allow Commission staff to assess compliance with biofouling management practices actions required in Section 2298.6(b).

The specific purpose of subdivision (c) is to allow adequate time for a vessel to prepare a Biofouling Record Book in the event that it was not scheduled to arrive at a California port but was routed to California without the required documents.

NECESSITY

The Biofouling Record Book is necessary to consolidate, in a centralized location, all of the documentation associated with the vessel's biofouling management practices. The Biofouling Management Plan described in 2 CCR § 2298.3 outlines the vessel's biofouling management strategies. The Biofouling Record Book is where vessel operators or crew would record specific activities and maintenance used to carry out the biofouling management plan.

Easy access to centralized information contained within the Biofouling Record Book is critically important to facilitate onboard inspections by Commission staff. Commission staff would review information contained within the Biofouling Record Book to assess compliance with the proposed regulations and to assess the accuracy of the submitted Marine Invasive Species Program Annual Vessel Reporting Form required by 2 CCR § 2298.5. A central location for this information is also useful for a vessel master and crew to complete the Commission's Marine Invasive Species Program Annual Vessel Reporting Form.

During the technical advisory group meetings held to develop the proposed regulations, Commission staff were encouraged to keep the regulations consistent with the IMO Biofouling Guidelines and the IMO Biofouling Record Book. Subdivision (b)(1) is necessary to ensure that international parity is maintained.

Subdivision (b)(2) is necessary to facilitate onboard inspections by Commission staff and assess compliance with 2 CCR § 2298.6(b). Niche areas are typically unmanaged or undermanaged because they do not significantly affect hydrodynamic drag and fuel consumption. Subdivision (b)(2) would require the documentation of each vessel's strategies for managing niche areas and allow Commission staff to collect much needed data on these practices.

Subdivision (c) is necessary for instances where a vessel is not scheduled to arrive at a California port, and therefore may not have a Biofouling Record Book, but is rerouted to a California port. This subdivision allows a vessel a 60-day grace period to prepare the required documents, if the vessel would be returning to California. This subdivision is necessary because it allows all vessels, including those that were not planned to arrive at a California port, a reasonable opportunity to achieve compliance.

Section 2298.5. Marine Invasive Species Program Annual Vessel Reporting Form.

The form “Marine Invasive Species Program Annual Vessel Reporting Form” (SLC 600.12, Revised 08/16) is hereby incorporated by reference. The master, owner, operator, agent or person in charge of a vessel carrying, or capable of carrying, ballast water that arrives at a California port shall submit the “Marine Invasive Species Program Annual Vessel Reporting Form” (SLC 600.12, Revised 08/16) to the Commission in written or electronic form at least twenty-four hours in advance of the first arrival of each calendar year at a California port of call.

SPECIFIC PURPOSE OF THE REGULATION

The specific purpose of this regulation is to make specific the use of, and submission requirements for, the “Marine Invasive Species Program Annual Vessel Reporting Form.”

The Marine Invasive Species Program Annual Vessel Reporting Form combines questions from two existing mandatory reporting forms, thereby reducing the administrative burden on the regulated industry and Commission staff. The proposed form has two sections. Section One includes all of the questions from the existing Hull Husbandry Reporting Form (Revised June 6, 2008), with a revision to question five to improve clarity and data quality. The revision makes an additional request for new information about the specific location (i.e. sea chest(s) or sea strainer(s)) of an installed marine growth prevention system.

Section Two of the proposed form includes a subset of revised questions from the existing Ballast Water Treatment Technology Annual Reporting Form (Revised July 1, 2010). Several questions from the existing form have been removed because the answers received over previous years were not providing useful data to carry out the purpose of the Marine Invasive Species Act. The revised questions are similar in nature to the questions in the existing form but are amended to improve clarity and ensure quality of data collection.

NECESSITY

Public Resources Code section 71205(f) describes the requirement for a master, owner, operator, agent, or person in charge of a vessel to maintain onboard the information contained within Section One of the Marine Invasive Species Program Annual Vessel

Reporting Form. Public Resources Code section 71205(e) has required mandatory annual submission of this information since 2008, collected through the existing Hull Husbandry Reporting Form. The submission schedule required by Public Resources Code section 71205(e) would expire upon the adoption of the proposed regulations, thus the submission schedule is amended as proposed here.

The information collected within Section One of the Marine Invasive Species Program Annual Vessel Reporting Form is necessary for:

- Determining compliance with several provisions of Article 4.8
- Evaluating vessel maintenance and operational practices that influence biofouling accumulation
- Allowing the Commission to perform per-vessel risk assessments to guide the selection of vessels for boarding and inspection

The proposed revision to question five (from the existing Hull Husbandry Reporting Form), making an additional request for new information about the specific location (i.e. sea chest(s) or sea strainer(s)) of installed marine growth prevention systems, is necessary to improve clarity and data quality and to better evaluate the likelihood of biofouling accumulation within a vessel's sea chests. Marine growth prevention systems installed in sea chests would provide some protection against biofouling accumulation within the sea chest. Marine growth prevention systems installed in the sea strainer do not provide protection to the sea chests.

Public Resources Code section 71205(g) describes the requirement for a master, owner, operator, agent, or person in charge of a vessel that has a ballast water treatment system installed on board to provide to the Commission information about the ballast water treatment system and its use.

The information collected within Section Two of the Marine Invasive Species Program Annual Vessel Reporting Form is necessary for:

- Collecting information about ballast water treatment system use by vessels arriving at a California port
- Collecting information about ballast water treatment system operational performance and whether the systems are capable of achieving compliance with discharge standards scheduled for implementation beginning in 2020
- Improving the quality of data used to inform the development of ballast water compliance assessment protocols and related policies to implement the ballast

water discharge performance standards set forth by Public Resources Code section 71205.3

The proposed revisions to the questions in the existing Ballast Water Treatment Technology Annual Reporting Form are necessary to improve clarity and to provide Commission staff with more useful data to carry out the purpose of the Marine Invasive Species Act.

The requirement for submission of the Marine Invasive Species Program Annual Vessel Reporting Form twenty-four hours in advance of a vessel's first arrival at a California port each calendar year is essential to provide time for the Commission to prioritize boarding and inspection of high-risk vessels. This provision is necessary to help the Commission utilize inspection resources efficiently.

Section 2298.6. Biofouling Management for Wetted Surfaces.

The provisions described in this section apply to newly constructed vessels delivered into service on or after January 1, 2018, and to existing vessels beginning with completion of the first regularly scheduled out-of-water maintenance on or after January 1, 2018.

SPECIFIC PURPOSE OF THE REGULATION

The specific purpose of this regulation is to make clear the effective date of this specific section, based on a vessel's date of delivery or most recent out-of-water maintenance.

NECESSITY

This regulation is necessary to provide time for a vessel owner or operator to develop and implement an effective Biofouling Management Plan. Preventive biofouling management is an important component of an effective Biofouling Management Plan. Many preventive biofouling management tools (e.g. anti-fouling coatings) can only be applied or initiated while the vessel is in dry dock or during shipbuilding. This provision would allow vessel owners or operators sufficient time to develop a vessel-specific management plan and to implement it at an appropriate time (i.e. when the vessel is in dry dock or during shipbuilding).

(a) The master, owner, operator, or person in charge of a vessel arriving at a California port shall manage biofouling on the wetted surfaces of the

vessel, except those niche areas described in subdivision (b) of this section, in any of the following ways:

(1) If a vessel is using an anti-fouling coating, the coating shall not be aged beyond its effective coating lifespan, as documented in 2 CCR § 2298.3(b)(2)(C). If a vessel is using an anti-fouling coating and the coating is aged beyond its effective coating lifespan, as documented in 2 CCR § 2298.3(b)(2)(C), the master, owner, operator, or person in charge of a vessel shall document in the Biofouling Management Plan how biofouling on the wetted surfaces of the vessel, except those niche areas listed in subdivision (b)(1) of this section, shall be managed after the effective coating lifespan is exceeded. All biofouling management actions undertaken, and reports resulting from such actions, shall be documented in the Biofouling Record Book;

(2) If a vessel is not using an anti-fouling coating, the master, owner, operator, or person in charge of a vessel shall document in the Biofouling Management Plan how biofouling on the wetted surfaces of the vessel, except those niche areas listed in subdivision (b)(1) of this section, shall be managed in the absence of an anti-fouling coating. All biofouling management actions undertaken and reports resulting from such actions shall be documented in the Biofouling Record Book.

SPECIFIC PURPOSE OF THE REGULATION

The specific purpose of subdivision (a) is to specify minimum requirements for biofouling management on wetted vessel surfaces, except the niche areas listed in subdivision (b) of this section, based on best practices.

NECESSITY

This subdivision is necessary to specify minimum biofouling management requirements for a vessel's hull and other wetted surfaces not specifically listed in subdivision (b) of this section.

A vessel's total wetted surface area represents the potential surface area for biofouling to accumulate. Total wetted surface area is therefore analogous to ballast water discharge as an estimate of the magnitude of potential NIS risk if left unmanaged. The average wetted surface area of a vessel arriving to the states of California, Oregon, and Washington between July 2003 and June 2005 was 9,070 square meters (Davidson et al. 2007). As a reference, 9,070 square meters is slightly more than two American football fields side-by-side (8,919 square meters). This amount of wetted surface area

per vessel represents a considerable amount of potential biofouling, considering biofouling can accumulate at densities in the thousands to hundreds of thousands of organisms per square meter. The hull and other wetted surfaces covered by subdivision (a) represent an overwhelming majority of the total wetted surface area on a vessel.

The hulls of a large majority of vessels operating within California are managed proactively through the use of anti-fouling and foul-release coatings (Dobroski et al. 2015). When used appropriately, these coatings represent the best management practice for preventing biofouling accumulation. However, these coatings can be used inappropriately. An example of an inappropriate use would be a vessel owner or operator applying a coating designed for a 36-month effective lifespan and relying on it to protect the vessel for 60 months. The coating is likely to be less effective or ineffective after the designed effective lifespan, and the vessel would not be adequately protected against biofouling accumulation (Finnie and Williams 2010).

Subdivision (a)(1) is necessary because it encourages vessel owners and operators to use best practices to manage biofouling on vessel wetted surfaces. This subdivision is intended to:

- Encourage vessel owners and operators that are already implementing best practices, including appropriate use of anti-fouling and foul-release coatings, to continue the practice
- Encourage vessel owners and operators that are not implementing best practices to do so

Vessel owners and operators would be required by these regulations to manage biofouling on their vessels. The appropriate use of anti-fouling and foul-release coatings is one way to achieve compliance.

Most anti-fouling coatings are designed for an effective lifespan of three to five years. More than 97% of the individual vessels operating in California during 2013 had coatings less than 5 years old, and more than 79% had coatings less than 3 years of age (Dobroski et al. 2015).

Anti-fouling and foul-release coatings that are aged beyond the designed effective lifespan are expected to be less effective or ineffective at preventing biofouling accumulation. Vessels with coatings beyond their effective lifespan are not using best preventive practices appropriately and therefore must rely on other methods to manage biofouling. Subdivision (a)(1) is necessary to ensure that any vessel owners and

operators not using best preventive practices appropriately still implement a plan for managing biofouling.

Subdivision (a)(2) is necessary because vessels without anti-fouling or foul-release coatings are not using best preventive practices and must rely on other methods to manage biofouling. This subdivision is necessary to ensure that owners and operators not implementing best preventive practices still implement a plan for managing biofouling.

(b) The master, owner, operator, or person in charge of a vessel arriving at a California port shall manage biofouling on the niche areas listed in subdivision (b)(1) of this section, if present, in a manner consistent with the requirements listed in subdivision (b)(2) of this section. Any other niche areas should also be managed in a manner consistent with subdivision (b)(2) of this section.

(1) Biofouling management shall apply to the following niche areas, if present:

(A) Sea chests;

(B) Sea chest gratings;

(C) Bow and stern thrusters;

(D) Bow and stern thruster gratings;

(E) Fin stabilizers and recesses;

(F) Out-of-water support strips;

(G) Propellers and propeller shafts; and

(H) Rudders.

(2) Biofouling in niche areas must be managed using one or more biofouling management practices that are appropriate for the vessel and its operational profile, as determined by the master, owner, operator, or person in charge of a vessel, and subject to the following conditions:

(A) All niche area management practices to be employed as part of the overall biofouling management strategy shall be listed

in the Biofouling Management Plan, as required by 2 CCR § 2298.3(b)(2).

(B) All completed niche area management practices shall be documented in the Biofouling Record Book, as required by 2 CCR § 2298.4(b)(2).

(C) If any of the niche area management practices listed in the Biofouling Management Plan are not conducted as planned, the reason(s) why the practice(s) were not conducted shall be documented in the Biofouling Record Book.

SPECIFIC PURPOSE OF THE REGULATION

The specific purpose of subdivision (b) is to specify minimum requirements for biofouling management on eight niche areas that are scientifically documented as hotspots for biofouling accumulation. These niche areas are typically undermanaged or unmanaged.

NECESSITY

This provision is necessary to ensure that niche areas are managed adequately to prevent biofouling accumulation. Niche areas are wetted surfaces of a vessel that:

- May not be exposed to high velocity water flows typical of the exposed hull surfaces
- May be susceptible to coating system wear or damage
- May be inadequately protected by coatings or other anti-fouling systems

Over the past decade, the scientific literature has indicated that niche areas are highly susceptible to accumulating biofouling and present a high risk of NIS introduction (Coutts et al. 2003, Coutts and Taylor 2004, Coutts and Dodgshun 2007, Australian Shipowners Association 2007, Davidson et al. 2009b, Davidson et al. 2010a, Sylvester and MacIsaac 2010, Davidson et al. 2016). This topic was addressed in detail during several of the TAG meetings, with scientists outlining research results in support of these findings.

The lack of attention paid to niche areas from ship owners and operators often leads to heavy fouling in these areas. Basic hull husbandry practices and targeted use of appropriate anti-fouling coatings, marine growth prevention systems, or other anti-fouling systems can be utilized to properly maintain these niche areas.

Subdivision (b) is necessary to focus attention, and encourage improved management of, these specific vessel surfaces that are often undermanaged and pose the greatest risk of biofouling accumulation and NIS introduction.

Subdivision (b)(1) is necessary to specify the eight niche areas that are typically undermanaged and that have been documented as being hotspots for biofouling accumulation on vessels arriving at California ports.

Subdivision (b)(2) is necessary to identify the minimum level of biofouling management for the niche areas specified in subdivision (b)(1). A vessel master, owner, or operator must manage these areas in a way that he or she identifies as appropriate for the vessel and its operational profile.

This subdivision would also allow Commission staff to collect data on the types of management practices employed for these niche areas through data collected via annual submission of the Marine Invasive Species Program Annual Vessel Reporting Form and through vessel inspections. Along with targeted inspections, this information would provide insight into the effectiveness of niche area management practices and would allow Commission staff to offer guidance on effective management options (i.e. effective practices, not technologies) in the future.

Subdivision (b)(2)(A) is necessary to specify that the management practices to be employed for these niche areas must be listed and described in the Biofouling Management Plan as part of the overall vessel-specific strategy for managing biofouling.

Subdivision (b)(2)(B) is necessary to ensure that the management practices employed for these niche areas are documented in the Biofouling Record Book. This would allow Commission staff to assess compliance with 2 CCR § 2298.6(b).

Subdivision (b)(2)(C) is necessary to ensure that a master, owner, operator, or person in charge of a vessel documents the reason(s) why any planned niche area management is not carried out.

Section 2298.7. Requirements for Vessels with Extended Residency Periods.

The provisions described in this section apply to newly constructed vessels delivered into service on or after January 1, 2018, and to existing vessels

beginning with completion of the first regularly scheduled out-of-water maintenance on or after January 1, 2018.

The master, owner, operator, or person in charge of a vessel that has had an extended residency period since its most recent out-of-water maintenance, in-water treatment, or in-water cleaning must ensure that the vessel is compliant with the following requirements upon arrival to a California port:

(a) Manage biofouling in the niche areas listed in 2 CCR § 2298.6(b)(1), if present, in a manner that is consistent with the niche area management practices listed in the Biofouling Management Plan. All activities employed to manage biofouling in the niche areas described in 2 CCR § 2298.6(b)(1), if present, that accumulates as a result of the extended residency period shall be documented in the Biofouling Record Book.

(b) Any activities, including in-water inspection, in-water cleaning, in-water treatment, or out-of-water maintenance, to manage biofouling on the wetted surfaces of the vessel, except those niche areas listed in 2 CCR § 2298.6 (b)(1), that accumulates as a result of the extended residency period shall be documented in the Biofouling Record Book.

SPECIFIC PURPOSE OF THE REGULATION

The specific purpose of this regulation is to:

- Make clear the effective date of this section, based on a vessel's date of delivery or most recent out-of-water maintenance
- Require a master, owner, operator, or person in charge of a vessel remaining in one geographical location for forty-five days or longer, to manage biofouling, if necessary. The vessel must also keep records of management actions to reduce the NIS introduction when arriving at a California port.

NECESSITY

This proposed regulation is necessary to provide time for a vessel owner or operator to implement an effective Biofouling Management Plan. A vessel that experiences an extended residency period would have to manage its biofouling as described in its vessel-specific Biofouling Management Plan. The proposed regulation must therefore become effective once a vessel's Biofouling Management Plan is required.

The proposed regulation is also necessary to reduce the NIS introduction risk from vessels that remain in one geographic location for 45 days or more. A vessel may fall

into this category if it remains stationary at berth or at anchor (e.g. layup) or if it travels slowly and sporadically across short distances within the same port (e.g. construction barge, dredge). This type of inactivity or low-activity is associated with increased biofouling accumulation (Coutts 2002, Coutts and Taylor 2004, Davidson et al. 2008, Hopkins and Forrest 2010), and poses an increased risk of introducing NIS into California. The Commission's biofouling TAG addressed this topic in detail during several meetings, with scientists outlining research results supporting the need to manage vessels with frequent and/or prolonged periods of inactivity (see TAG notes from meetings one through four).

Vessels that remain in one geographic location for 45 days or more would likely require biofouling management to minimize NIS introduction risk. Similar to vessels without protective coatings, with coatings aged beyond their effective lifespan, or with coatings that fail, these extended residency vessels represent unacceptable NIS introduction risk if/when they depart the lay-up port and arrive at a California port.

Extended residency periods of 45 days or greater have been rare occurrences for vessels that operate in California. A small fraction of the vessels operating in California have reported a residency period of this length:

- 2.82% of vessels in 2008
- 3.96% of vessels in 2011
- 2.58% of vessels in 2015

Even though only a small percentage of vessels fall into this category, those that do represent unacceptable NIS introduction risk.

Subdivision (a) is necessary to ensure that niche areas are managed in a manner that is consistent with the vessel-specific Biofouling Management Plan. There is an economic incentive for managing biofouling on the vessel's hull after an extended residency period (to reduce biofouling-induced drag and excess fuel consumption), but there is little or no economic incentive for managing biofouling in the niche areas. Without this proposed subdivision, a master, owner, operator, or person in charge of a vessel may not manage niche area biofouling, resulting in elevated NIS introduction risk for California.

The requirement to record management actions to address biofouling that accumulates as a result of the extended residency period is necessary to evaluate the likelihood that the niche areas may still have extensive biofouling present during the arrival at a California port, and therefore represent a greater risk of NIS introduction. This

information is necessary for information gathering, risk evaluation purposes, and to inform future revisions to these regulations.

Subdivision (b) is necessary to ensure that any actions that occur to manage biofouling that accumulates on the vessel's hull as a result of the extended residency period are recorded in the Biofouling Record Book. Biofouling is likely to accumulate on a vessel's hull during an extended residency period. Documenting management actions in the Biofouling Record Book would allow Commission staff to evaluate the likelihood of extensive biofouling and NIS introduction risk.

The requirement to record management actions immediately before and after (e.g. reactive management actions such as in-water cleaning) the extended residency period is necessary to evaluate the likelihood that the vessel would have extensive biofouling present during the arrival at a California port, and therefore represent a greater risk of NIS introduction. This information is necessary for information gathering, risk evaluation purposes, and to inform future revisions to these regulations.

Section 2298.8. Propeller Cleaning in California Waters.

Propeller cleaning in California waters is not prohibited under this article.

SPECIFIC PURPOSE OF THE REGULATION

The specific purpose of this regulation is to make clear that the regulations contained within Article 4.8 do not prohibit propeller cleaning in California waters.

NECESSITY

This clarification is necessary because of an existing reference to Article 4.8 contained within the California State Water Resources Control Board's Clean Water Act section 401 certification of the U.S. EPA 2013 Vessel General Permit, which states:

> "[Condition] 11. Propeller cleaning is allowed until the biofouling management regulations for vessels are adopted by the SLC and become effective. After the SLC biofouling management regulations become effective, propeller cleaning is allowed as specified in those regulations."

Commission staff does not intend to limit the practice of propeller cleaning or propeller polishing at this time, and thus makes this clear in this section to avoid confusion.

Section 2298.9. Alternatives.

(a) Petitions for Alternatives.

(1) Any person subject to these regulations may submit a petition to the Division Chief for alternatives to the requirements of Article 4.8 as applied to the petitioner.

(2) All petitions for alternatives must be submitted in writing. A petition may be in any written form, but it must contain all data and information necessary to evaluate its merits to fulfill the purposes of these regulations to move the State expeditiously toward elimination of the discharge of nonindigenous species into the waters of the State, or into waters that may impact the waters of the State, based on the best available technology economically achievable.

(3) All petitions for alternatives must be submitted and must receive approval prior to the vessel's arrival to a California port.

(b) Response to Petitions.

The Division Chief shall respond in writing to any petition for alternatives within thirty days of receipt of the petition.

(c) Approval of Alternatives.

(1) The Division Chief may approve any proposed alternatives to the requirements of Article 4.8 if she or he determines that the proposed alternatives will fulfill the purpose of these regulations as outlined in 2 CCR § 2298.1(a).

(2) If the Division Chief approves any proposed alternatives under this section, a letter of approval shall be issued to the petitioner setting forth the findings upon which the approval is based.

(3) The Division Chief may withdraw the letter of approval of any alternative requirements at any time if he or she finds that the person or persons subject to these regulations have not complied with the approved alternative requirements.

(4) Withdrawal of a letter of approval under this section shall be effective upon receipt by the petitioner of written notification of the withdrawal from the Division Chief.

SPECIFIC PURPOSE OF THE REGULATION

The specific purpose of this regulation is to provide a mechanism for requests for Alternatives to the requirements of Article 4.8. This regulation prescribes the petition process, including approval of a petition and withdrawal of an approval by the Division Chief of the Commission's Marine Environmental Protection Division. Alternatives proposed in petitions must fulfill the purpose of the regulation in 2 CCR § 2298.1(a).

NECESSITY

This regulation is necessary to allow for the petition of alternatives that would still meet the purpose of Article 4.8. There may be occurrences when a vessel owner or operator is not able to comply with the requirements proposed in Article 4.8 but may be able to perform an alternative form of biofouling management that is practical and also protective of California waters. This proposed regulation is necessary to provide the Division Chief the flexibility to approve alternative management requests if the purpose of the Act, as described in Public Resources Code section 71201(d), is still satisfied.

Subdivision (a) is necessary to describe the process for submitting a petition for an alternative form of management. It is necessary to evaluate petitions on a case-by-case basis because alternative management actions are likely to vary from vessel to vessel because of varying vessel operational profiles (e.g. different trading routes, traveling speeds). A suitable alternative for one vessel may not be suitable for others.

Subdivision (b) is necessary to describe the time limit for a petitioner to expect a response from the Marine Environmental Protection Division Chief.

Subdivision (c) is necessary to describe the process for approval or disapproval of a submitted petition.

Section 2298.9.1. Emergency Exemptions.

A vessel will be exempt from the requirements contained within Article 4.8 if all of the following conditions are satisfied:

(a) The vessel makes an unscheduled arrival to a California port because of an emergency, where the safety of the vessel or crew is compromised;

Arrival for the sole purpose of scheduled bunkering is not an emergency under this clause;

(b) The master, owner, operator, agent, or person in charge of the vessel notifies the Division Chief, in written or electronic form, of the emergency, and provides details on the nature of the emergency, no later than twenty-four hours after the arrival and cessation of the emergency;

(c) The vessel has not arrived to another California port since the most recent of the:

(1) Previous out-of-water maintenance;

(2) Vessel's delivery into service; or

(3) Date on which the vessel owner commenced ownership of the vessel.

(d) The vessel will remain in California waters for 21 days or less;

If the vessel remains in California waters for greater than 21 days, the Division Chief may require the master, owner, operator, or person in charge of a vessel to clean or treat the vessel to remove or inactivate macrofouling, using available in-water cleaning technologies, in-water treatment technologies, or out-of-water maintenance. The Division Chief will consider the biofouling extent, vessel port residency duration, and available in-water cleaning or treatment options when making this determination.

SPECIFIC PURPOSE OF THE REGULATION

The specific purpose of this regulation is to create an emergency exemption clause for vessels that are not intending to operate within California waters but still must call at a California port because of an emergency where the safety of the vessel or crew is compromised.

This requirement differs from the 60-day grace period proposed for vessels making an unscheduled arrival at a California port (subdivision 2298.3(c) and 2298.4(c)). Subdivision 2298.3(c) and 2298.4(c) apply to vessels making unscheduled arrivals to California during their normal course of business, to allow them adequate time to prepare the necessary documents. This regulation (section 2298.9.1) applies only to vessels making an unscheduled arrival to a California port because of a true emergency where the safety of the vessel or the crew is compromised.

NECESSITY

This regulation is necessary because there may be situations when a vessel must enter California waters because of an emergency where the safety of the vessel or the crew is compromised. If there was no intention for a vessel to operate in California, the master, owner, operator, or person in charge of the vessel may not have developed nor implemented a vessel-specific biofouling management plan.

This regulation is necessary because it prescribes the criteria necessary for a vessel to be considered for an emergency exemption.

Subdivision (a) is necessary to set the criterion for a vessel that must make an unscheduled arrival for a true emergency, including threats to safety of life, property, or the environment.

Subdivision (b) is necessary to set the criterion that the Division Chief must be notified and provided with details on the nature of the emergency not less than 24 hours after the emergency has ended. This 24-hour window is intended to allow the vessel master enough time to ensure the safety of the vessel and crew, but also to notify the Division Chief of the emergency arrival claim. Notification is necessary to inform Commission staff that the vessel is experiencing an emergency, and will therefore not be issued a violation for noncompliance with Article 4.8. Notification is also necessary to ensure that all of the criteria outlined in this section for claiming an emergency exemption are satisfied.

Subdivision (c) is necessary to set the criterion that a vessel must not have arrived at another California port since the most recent of the previous out-of-water maintenance, the vessel's delivery, or the date when the vessel owner took ownership over the vessel. If a vessel has already arrived at a California port, it would have already been subject to the requirements of Article 4.8. As a result, either the Biofouling Management Plan should already be in place or the vessel would be within the 60-day grace period to prepare required documents. Unlike ballast water management that is typically conducted short-term and during a voyage, biofouling management is primarily preventive in nature and generally long-term.

Subdivision (d) is necessary to limit the exposure to California waters from a potentially unmanaged vessel to 21 days. Beyond 21 days, the Division Chief may require that the vessel's biofouling be managed. This 21-day window is intended to be a compromise between the need to address the vessel's emergency and limit the NIS introduction risk to California.

Article 4.7. Performance Standards for the Discharge of Ballast Water for Vessels Operating in California Waters

~~Section 2297.1. Ballast Water Treatment Technology Reporting Requirements.~~

~~(a) Ballast Water Treatment Technology Annual Reporting Form~~

~~(1) The following form "Ballast Water Treatment Technology Annual Reporting Form (Revised July 1, 2010)" is hereby incorporated by reference, and shall be used to comply with the provisions of Public Resources Code Section 71205(g) by the master, owner, operator, agent, or person in charge of a vessel that has a ballast water treatment system installed on board and has discharged treated ballast in waters of the state.~~

~~(2) The "Ballast Water Treatment Technology Annual Reporting Form" shall be submitted to the Commission in written or electronic form within 60 days of receiving a written or electronic request from the Commission.~~

~~(b) Ballast Water Treatment Supplemental Reporting Form~~

~~(1) The following form "Ballast Water Treatment Supplemental Reporting Form (Revised July 1, 2010)" is hereby incorporated by reference, and shall be used to comply with the provisions of Public Resources Code Section 71205(g) by the master, owner, operator, agent, or person in charge of a vessel that has a ballast water treatment system installed on board and has discharged treated ballast in waters of the state.~~

~~(2) The "Ballast Water Treatment Supplemental Reporting Form" shall be submitted to the Commission in written or electronic form upon departure of that vessel from a California port or place of call if that vessel discharged treated ballast water into the waters of the state.~~

SPECIFIC PURPOSE OF THE REGULATION

The specific purpose of this action is to eliminate unnecessarily burdensome reporting requirements.

NECESSITY

The repeal of this section, and the adoption of the new Marine Invasive Species Program Annual Vessel Reporting Form (SLC 600.12, Revised 08/16), as proposed for incorporation by reference, is necessary to avoid excessive reporting requirements. The questions included in the Ballast Water Treatment Technology Annual Reporting Form (Revised July 1, 2010) described in subdivision (a) are incorporated into the proposed Marine Invasive Species Program Annual Vessel Reporting Form (SLC 600.12, Revised 08/16), proposed for incorporation by reference in section 2298.5. The data that was collected through the Ballast Water Treatment Supplemental Reporting Form (Revised July 1, 2010) described in subdivision (b) are now provided to the Commission on the new (as of May 1, 2016) USCG Ballast Water Management Report (OMB number 1625-0069) that is submitted to the Commission on a per vessel arrival basis. The repeal of the Ballast Water Treatment Supplemental Reporting Form (Revised July 1, 2010) is necessary to eliminate redundancy with USCG reporting requirements.